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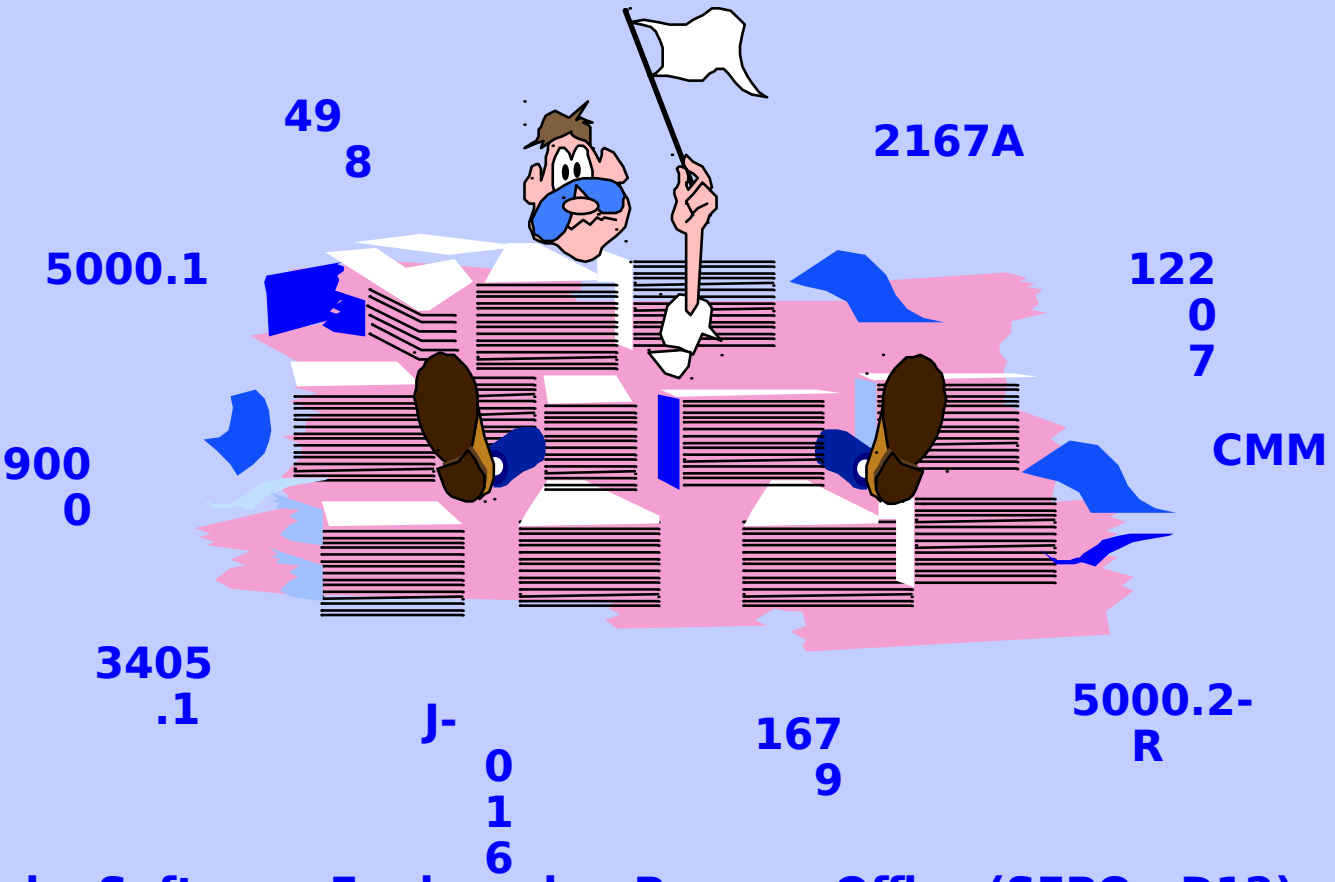
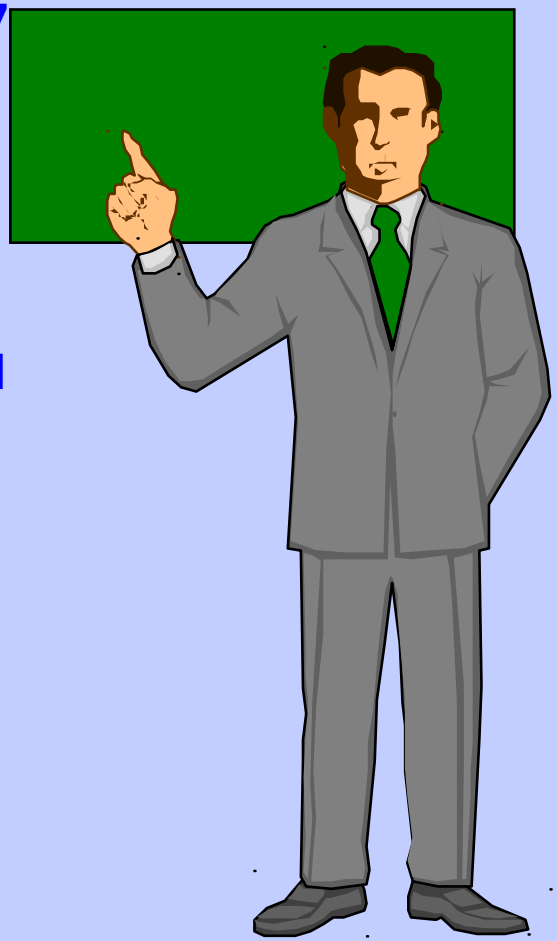
An Introduction to IEEE/EIA 12207



by Software Engineering Process Office (SEPO - D12)
Software Process Improvement Working Group (SPIWG)
October 13, 1999

Outline

- Background of IEEE/EIA 12207
- Structure of the standard
- Its Life Cycle Processes
- 12207 vs. 2167A and 498
- How it relates to the SW-CMM
- How to tailor it for your use
- How to use it on a project
- How to get a copy of it



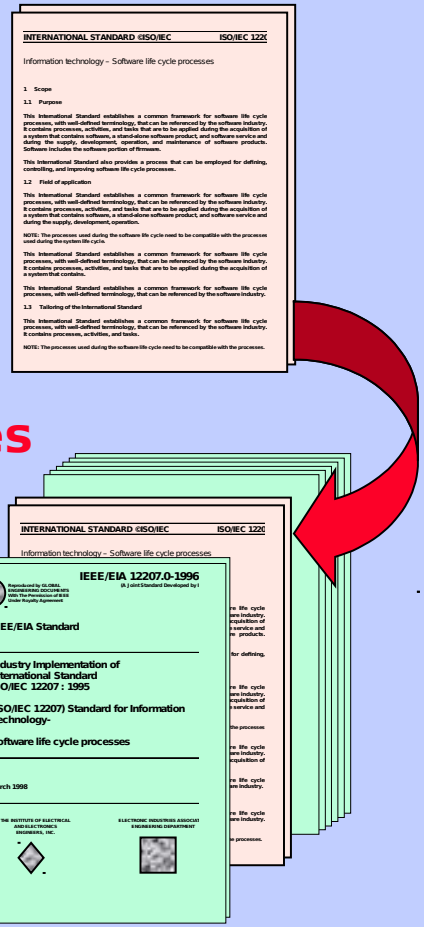
Are there *TWO* 12207's?

ISO/IEC 12207: Information Technology - Software Life Cycle Processes

published in 1995 by

International Organization for Standardization
International Electrotechnical Commission

- **Provides common framework for developing and managing software**


INTERNATIONAL STANDARD ©ISO/IEC ISO/IEC 122
Information technology – Software life cycle processes
1 Scope
1.1 Purpose
1.2 Field of application
1.3 Tailoring of the International Standard
INTERNATIONAL STANDARD ©ISO/IEC ISO/IEC 122
Information technology – Software life cycle processes
IEEE/EIA 12207.0-1996
IEEE/EIA Standard
Industry Implementation of International Standard ISO/IEC 12207 : 1995
(ISO/IEC 12207) Standard for Information Technology-
Software life cycle processes
March 1998

IEEE/EIA 12207: Software Life Cycle Processes

published in 1998 by

Institute of Electrical and Electronics Engineers
Electronic Industries Association

- **Includes ISO/IEC 12207 in its entirety**
- **Adds clarifications, concepts, and guidelines to foster better understanding and applicat**
- **Adopted for use by DoD on May 27,1998**
- **Designated by SSC SD for life cycle processes**

The Purpose of 12207

Establish a common framework for software life-cycle processes, with well-defined terminology that can be referenced by the software industry.

- **To acquire, supply, develop, operate, and maintain software products**
- **To define, control, and improve software life cycle processes**

12207 provides industry a basis for software practices usable for both national and international business

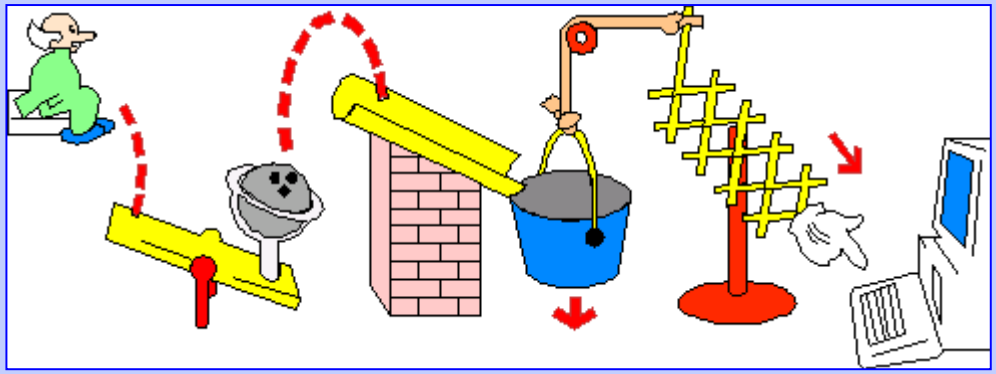
IEEE/EIA 12207 Has Many Uses

- To acquire, supply, develop, operate, and maintain software
- To support the above functions in the form of quality assurance, configuration management, joint reviews, audits, verification, validation, problem resolution, and documentation
- To manage and improve the organization's processes and personnel
- To establish software management and engineering environments based upon the life cycle processes as adapted and tailored to serve business needs
- To foster improved understanding between customers and vendors and among the parties involved in the life cycle of a software product
- To facilitate world trade in software

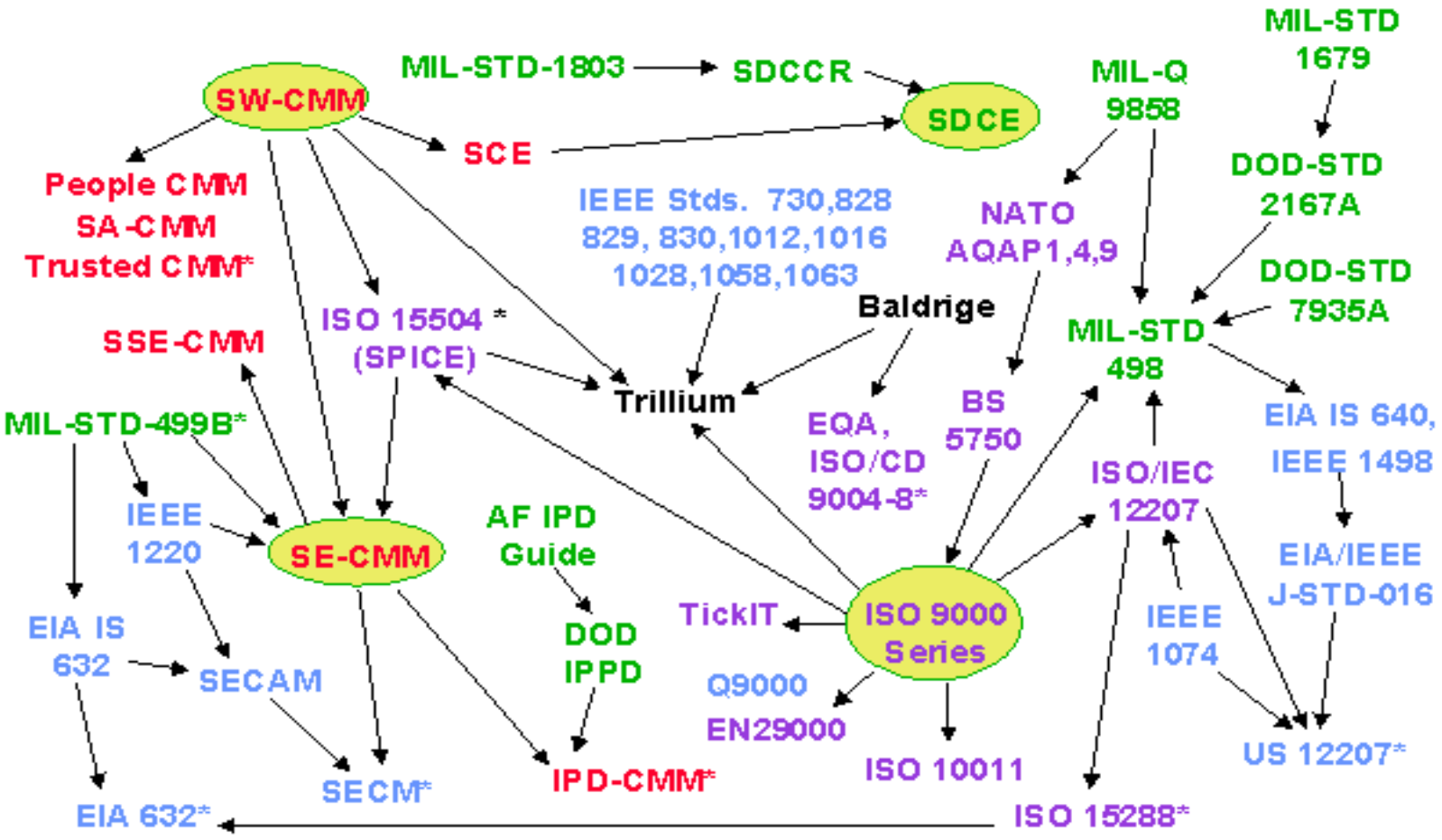
- 12207.0 Forward

Why Use Standards?

- Establish uniform requirements for development and documentation
- Define a common framework for software life cycle processes
- Clarify the roles and interfaces of participants
- Clarify the types and contents of documentation
- Identify the tasks, phases, baselines, reviews, and documents needed
- Follow the lessons learned and best practices of the industry
- Avoid the pitfalls and problems of the past



Don't Get Caught in the Standards Quagmire



* Not yet released

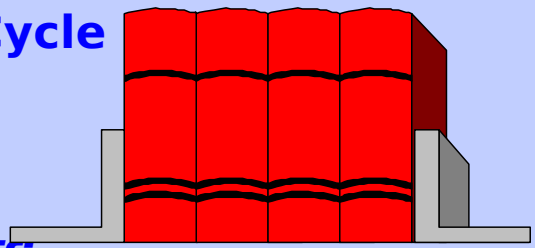
From the SPC's http://www.software.org/Quagmire/

The Evolution of Standards Affecting DoD Software Development

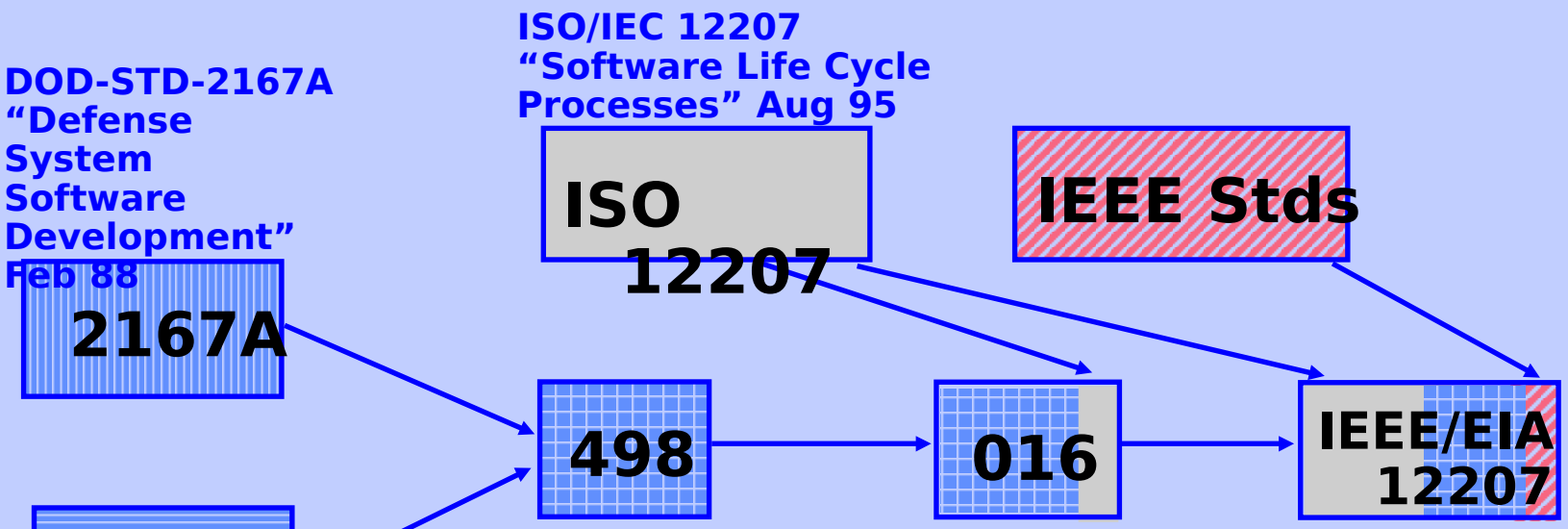
- MIL-STD-1679A Software Development 1983
- DOD-STD-2167A Defense System Software Development 1988
- DOD-STD-7935A AIS Documentation Standards 1988
- MIL-STD-498 Software Development and Documentation 1994

  (SecDef Perry Memo - June 1994)

- ISO 9000 (series - on Quality Management, etc.) 1991-
- J-STD-016-1995 Software Development - 1995 Acquirer-Supplier Agreement
- ISO/IEC 12207 Information Technology - Software Life Cycle Processes 1996
- IEEE/EIA 12207 Software Life Cycle 1998



The Family Tree of Standards



DOD-STD-7935A "DoD Automated Information Systems (AIS) Documentation Standards" Oct 88

MIL-STD-498 "Software Development and Documentation " Dec 94

J-STD-016-1995 (Trial Use) "Software Life Cycle Processes, Software Development" Sep 95

IEEE/EIA 12207.0-1996

IEEE/EIA 12207.1-1997

IEEE/EIA 12207.2-1997

"Software Life Cycle Processes"

Mar/Apr 98

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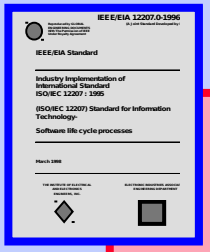
Outline of IEEE/EIA 12207.0: "Software Life Cycle Processes"


IEEE/EIA 12207.0-1996

IEEE/EIA Standard

Industry Implementation of International Standard ISO/IEC 12207 : 1995

(ISO/IEC 12207) Standard for Information Technology-

Software life cycle processes

March 1998

Forward

1. Scope
2. Normative references
3. Definitions
4. Application of this Standard
5. Primary processes
6. Supporting processes
7. Organizational processes

ISO/IEC 12207

Annexes A - D

Annexes E - J

total: 85 pages

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Outline of IEEE/EIA 12207.1: "Software Life Cycle Processes - Life cycle data"

IEEE/EIA 12207.0-1996

IEEE/EIA Standard

Industry Implementation of International Standard ISO/IEC 12207 : 1995

(ISO/IEC 12207) Standard for Information Technology-

Software life cycle processes

March 1998

Forward

1. Scope

2. Normative references

3. Definitions

4. Life cycle data

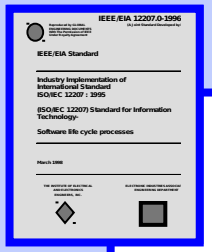
5. Generic info item content guide

6. Specific info item content guideline

Annex A - References

total: 36 pages

Outline of IEEE/EIA 12207.2: "Software Life Cycle Processes - Implementation considerations"


IEEE/EIA 12207.0-1996

IEEE/EIA Standard

Industry Implementation of International Standard ISO/IEC 12207 : 1995

(ISO/IEC 12207) Standard for Information Technology-

Software life cycle processes

March 1998

Forward and introduction

1. Scope

2. Normative references

3. Definitions

4. Application

5. Primary processes

6. Supporting processes

7. Organizational processes

Annexes A - M

Repeats 12207.0 clauses with additional guidance

total: 109 pages

Terminology used in 12207 (both of 'em)

- 17 Life Cycle Processes
  - 5 Primary Processes - 12207.0 § 5
  - 8 Supporting Processes - 12207.0 § 6
  - 4 Organizational Processes - 12207.0 § 7
- Each Process is broken down into Activities
- Each Activity is broken down into Tasks
- Tasks reference Information Items (software products/documents)
  - 84 items in matrix - 12207.1 § 4.3
  - Generic guidelines for 7 categories - 12207.1 § 5
  - Specific guidelines for 30 - 12207.1 § 6

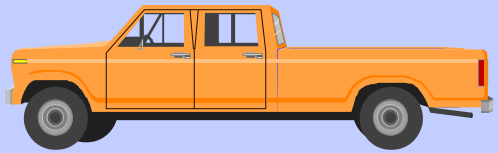
(Note: § = Clause/Section)

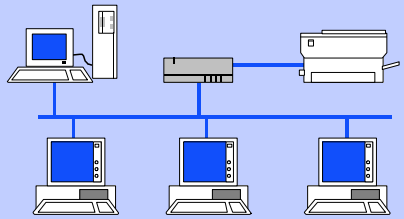
12207's five *Primary* Life Cycle Processes

The primary processes define what the organization elements do during the software life cycle.

Process	Role	498 term
Acquisition	**Acquirer - an organization that procures a system or service**	**Acquirer**
Supply	**Supplier - an organization that enters into contract with acquirer under terms of the contract**	
Development	**Developer - organization that performs development during the life cycle process**	**Developer**
Maintenance	**Maintainer - an organization that performs maintenance activities**	(Support Agency)
Operation	**Operator - an organization that operates the system**	
	User - An individual or organization that uses the system for a specific function	(User)

Examples of Life Cycle Roles

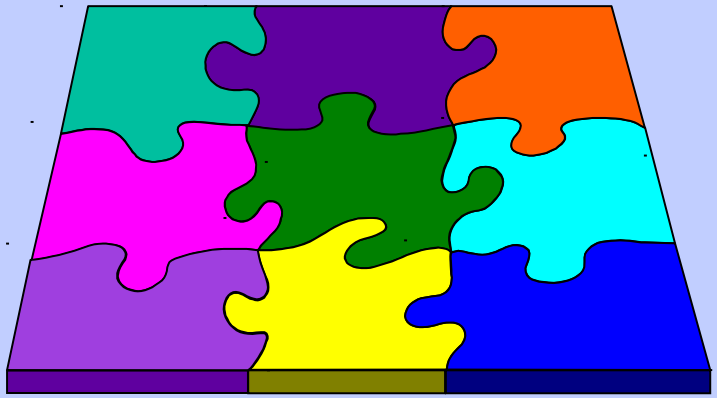




Role	Teens' Truck	Navy System
• Acquirer ("Buyer")	Mom and Dad	Systems Command, PD-xx
• Supplier ("Vendor")	Ed's Car Lot	Systems Center D555
• Developer	Ford Motor	Cool Coders Corp.
• Maintainer	Terry's Tuneup Shop	Systems Center D999
• Operator	Family's Teenagers	Pacific Fleet
• User	A teenager	Ship's watch team

12207's *Organizational* and *Supporting* Processes

- **Organizational Life Cycle Processes - typically outside the realm of specific projects and contracts. Should be in place prior to performing primary processes.**
  - **Management**
  - **Infrastructure**
  - **Improvement**
  - **Training**
- **Supporting Processes - employed and executed by another process. Responsibility of the organization.**
  - **Documentation**
  - **Configuration Management**
  - **Quality Assurance**
  - **Verification**
  - **Validation**
  - **Joint Review**
  - **Audit**
  - **Problem Resolution**



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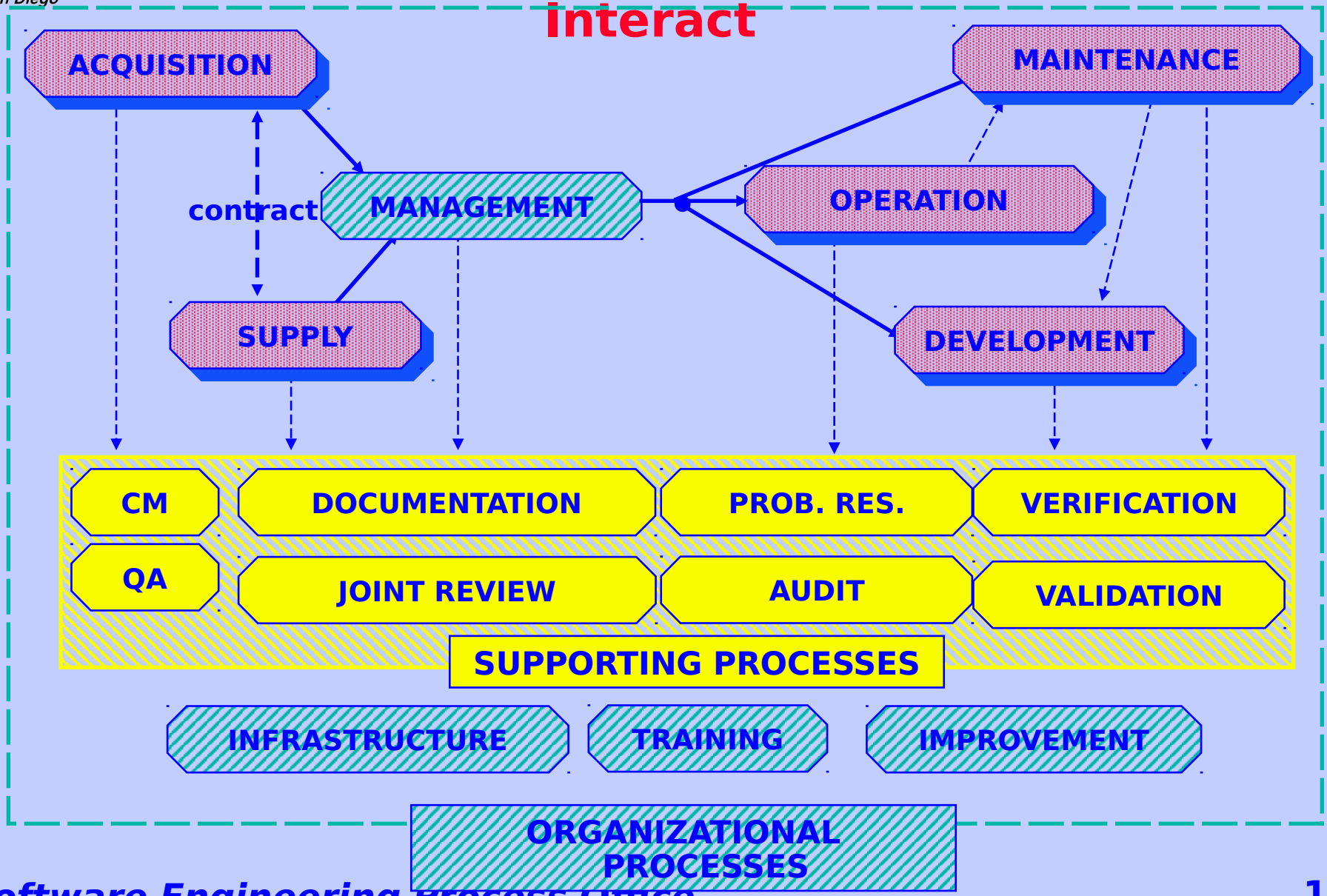
How The Life Cycle Processes interact



The Three Software Life-Cycle Development Strategies

Program Strategy	Define All Requirements First?	Multiple Development Cycles	Distribute Interim Software?
Once-Through (Waterfall)	Yes	No	No
Incremental (Preplanned Product Improvement)	Yes	Yes	Maybe
Evolutionary	No	Yes	Yes

From IEEE/EIA 12207.2 Annex I

- These are recommended by SSC SD as the basis for project planning and implementation.

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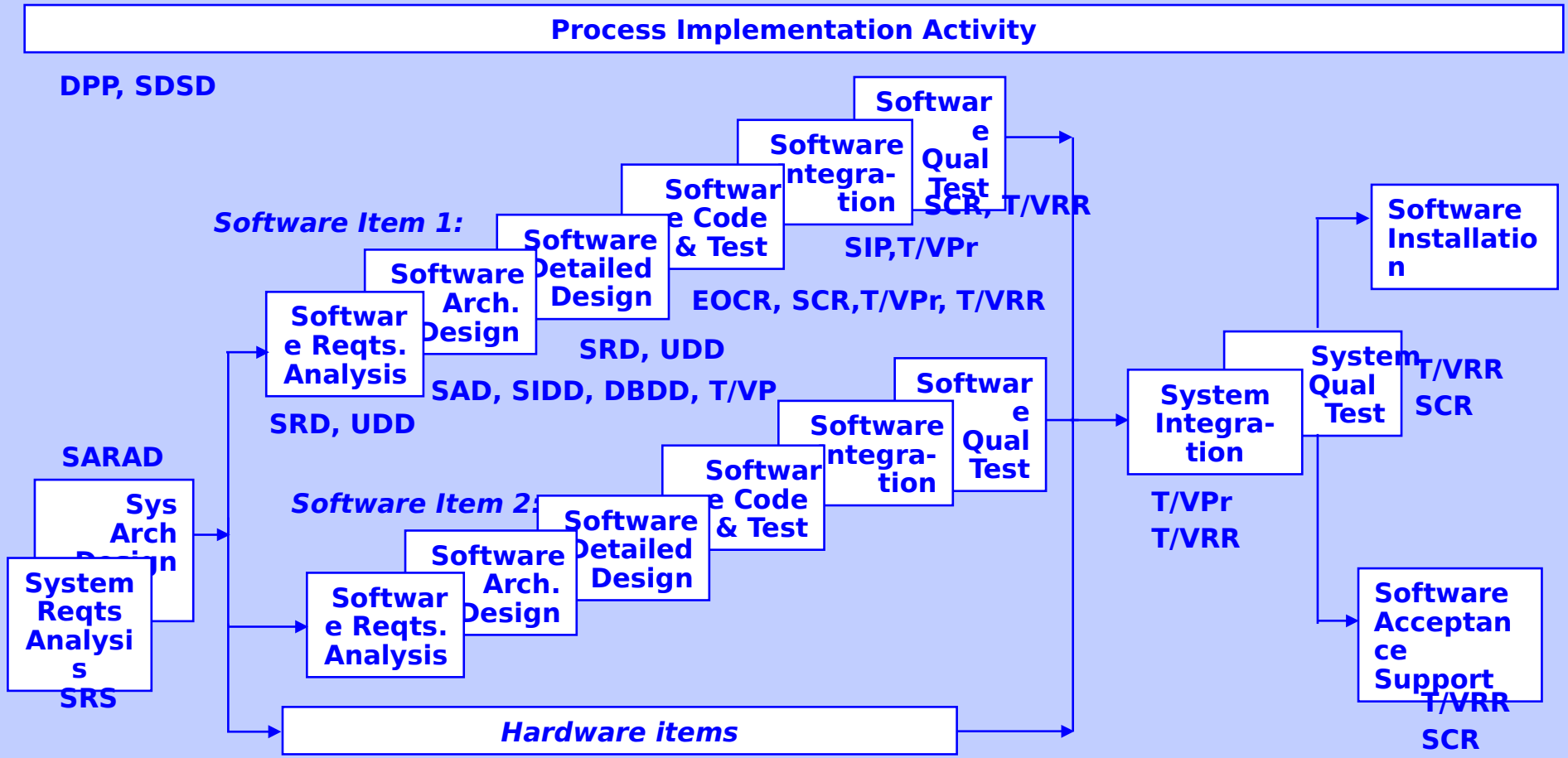
A Sample 12207 Development Process

One example of applying 12207 to the Waterfall development strategy



Supporting Processes: Documentation, CM, QA, Verification, Validation, Joint Review, Audit, Problem resolution

~~SCMP, SCMR, SCIR, SQAP, SQAR, SVRR, PR/PRR~~

Organizational Processes: Management, Infrastructure, Improvement, Training

The 30 12207.1 “Information Items”

Descriptions
- Concept of operations description
- Database design description
- Software architecture description
- Software design description
- Software devel. standards descr.
- Software interface design descr.
- Software requirements description
- Sys. arch.& reqts. alloc. descr.
- User documentation description

Plans
- Acquisition plan
- Development process plan
- Maintenance process plan
- Operation process plan
- Project management plan
- Software CM plan
- Software integration plan
- Software QA plan
- Test or validation plan

Procedures
- Test or validation procedures

Record
- Evaluation records
- Executable object code record
- Software configuration index record
- Software CM records
- Software QA records
- Source code record

Report
- Problem report & prob. resolution report
- Software verification results report
- Test or validation results report

Request
- Change request or modification request

Specification
- System requirements specification

12207's Guidance for the "Information Items"

Guidance	Example
12207.0: General output/artifact requirements within Process/activities/task descriptions	§5.3.1.4: "The developer shall develop plans for conducting the activities of the development process. The plans should include (5 topics)…"
12207.1 §4.3 Table 1: Available standards, guides, references for example and assistance on 84 information items	For development process plan (§5.3.1.4), see: • J-STD-016 § E.2.1: "contents of Software Development Plan" (like 498) • IEEE 1074 *Standard for Developing Software Life Cycle Processes* • IEEE 1074.1 *Guide for Developing Software Life Cycle Processes* • and 2 others
12207.1 §5: Generic content guidelines for 7 "kinds" of item: description, plan, procedure, record, report, request, specification	§5.2.2 "A plan should include … planning activities and tasks, schedules, estimates, risks, cost, interfaces,…" (20 topics)
12207.1 §6: Specific content guidelines for 30 information Items	§6.5 "The development process plan should include specific standards, methods, tools, actions associated with the development …(8 topics)

12207's Management Process

An Organizational Life Cycle Process - 12207.0 § 7.1

Defines the basic activities of the management, including project management, related to the execution of a life cycle process.

Activity	Tasks
1 Initiation and scope definition	.1 Establish the requirements for management .2 Check resources: personnel, materials, etc. .3 Modify requirements to achieve criteria
2 Planning (in	.1 Plan efforts, schedules, tasks, duties, costs *Management process plan*)
3 Execution and control	.1 Implement plan to meet objectives .2 Monitor process .3 Investigate and resolve problems .4 Report progress
4 Review and evaluation	.1 Ensure products and plans are evaluated .2 Assess evaluation results
5 Closure	.1 Determine when process is complete .2 Check results for completeness

12207's Maintenance Process

A Primary Life Cycle Process - 12207.0 § 5.5

Defines the basic activities of the maintainer: managing modifications to the software product to keep it current and in operational fitness.

Activity	Tasks
1 Process Implementation	Document maintenance activities (in *Maintenance process plan*). Document problem tracking procedures. Manage modifications to the system.
2 Problem and modification analysis	Analyze problem reports. Replicate or verify problems. Develop modifications. Document problems, analysis, fixes (with *Modification request*). Get modifications approved per contract.
3 Modification implementation	Document where changes are needed. Implement modifications (use Development Process).
4 Maintenance review/ acceptance	Review integrity of modified system. Get approval for modifications per contract.
5 Migration	Ensure products meet with this standard. Develop and use Migration Plan. Notify users of migration. Conduct parallel operations if needed. Notify all concerned, archive all records. Perform post-op review of changes. Keep data from old environment.
6 Software retirement	Document plans for retirement. Notify all users of plans and activities. Conduct parallel operations. Notify all concerned, archive all records. Keep data from retired product per contract.

What about the Software Development Plan?

Management Process calls for "plans for execution of the process."

- 12207.0 § 7.1.2.1 lists 9 topics for inclusion
- 12207.1 § 4.3 Table 1 includes "Management process plan," refers to
  - IEEE 1058.1: *"Standard for Software Project Management Plans"*
- 12207.1 § 5.2 gives 20 items of Generic content of a "Plan"

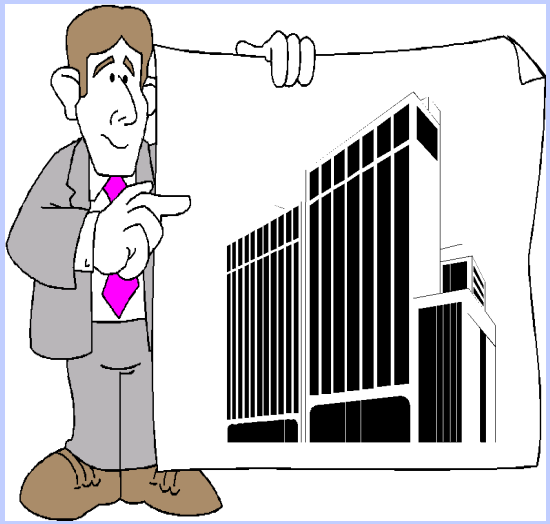
Supply Process calls for project management plan(s)

- 12207.0 § 5.2.4.5 lists 15 topics to be considered
- 12207.1 § 4.3 Table 1 includes "Project management plan," references include
  - IEEE 1058.1: *"Standard for Software Project Management Plans"*
  - J-STD-016 § E.2.1: "contents of Software Development Plan" (like 498)
  - IEEE 1074 *Standard for Developing Software Life Cycle Processes*
  - IEEE 1074.1 *Guide for Developing Software Life Cycle Processes*
- 12207.1 § 5.2 gives 20 items of Generic content of a "Plan"
- 12207.1 § 6.11 gives 18 items for "Project management plan"

Development Process calls for "plans for conducting the activities of the development process"

- 12207.0 § 5.3.1.4 lists 7 topics for inclusion
- 12207.1 § 4.3 Table 1 includes "Development process plan," references include
  - ASTM E622 *Guide for Developing Computerized Systems*
  - ASTM E1340 *Guide for Rapid Prototyping of Computerized Systems*
  - J-STD-016 § E.2.1: "contents of Software Development Plan" (like 498)
- 12207.1 § 5.2 gives 20 items of Generic content of a "Plan"
- 12207.1 § 6.5 gives 13 items for "Development process plan - may be part of Project management plan"

Can you Tailor 12207?



Tailoring 12207

- 12207 *should* be tailored for a project - no two projects are the same
- Tailoring considerations:
  - Life cycle activity: prototyping, maintenance
  - Software characteristics: COTS, reuse, embedded firmware
  - Your org's policies, languages, hardware reserve, culture
  - Acquisition strategy: contract type, contractor involvement
  - Life cycle strategy: waterfall, evolutionary, spiral, etc.
- The Tailoring Process (12207.0 Annex A)
  1. Identify project environment - strategy, activity, requirements
  2. Solicit inputs - from users, support team, potential bidders
  3. Select processes, activities, documentation, responsibilities
  4. Document tailoring decisions and rationale

SEPO's guidance on tailoring:

What CAN'T be tailored: the intent or objectives

What CAN be tailored: number of phases/activities, roles, responsibilities, document formats, formality/frequency of reports or reviews

(see Tailoring Guidelines in "Description of SSC SD Software Process Assets", at http://sepo.spawar.navy.mil/sepo/docs.html under OPD)

How does 12207 Compare to Previous Standards?

- **DOD-STD-2167A: Defense System Software Development**
  - Published: 29 February 1988
  - Superseded by MIL-STD-498 on 5 December 1994
    May still remain valid on many contracts
- **MIL-STD-498: Software Development and Documentation**
  - Published: 5 December 1994
  - Cancelled: 27 May 1998. superseded by IEEE/EIA 12207.
    May still remain valid on many contracts.
- **SecDef Memo "Specifications and Standards - A New Way of Doing Business"**
  - Issued 29 June 1994: "Use performance and commercial specifications and standards in lieu of military specifications and standards, unless no practical alternative exists..."
- **J-STD-016-1995: Software Development - Acquirer-Supplier Agreement**
  - Published: 30 September 1995 as Trial Use Standard by IEEE/EIA
  - Objective: replace MIL-STD with a non-government equivalent
  - "Almost identical" to MIL-STD-498 with changes in traceability, terminology

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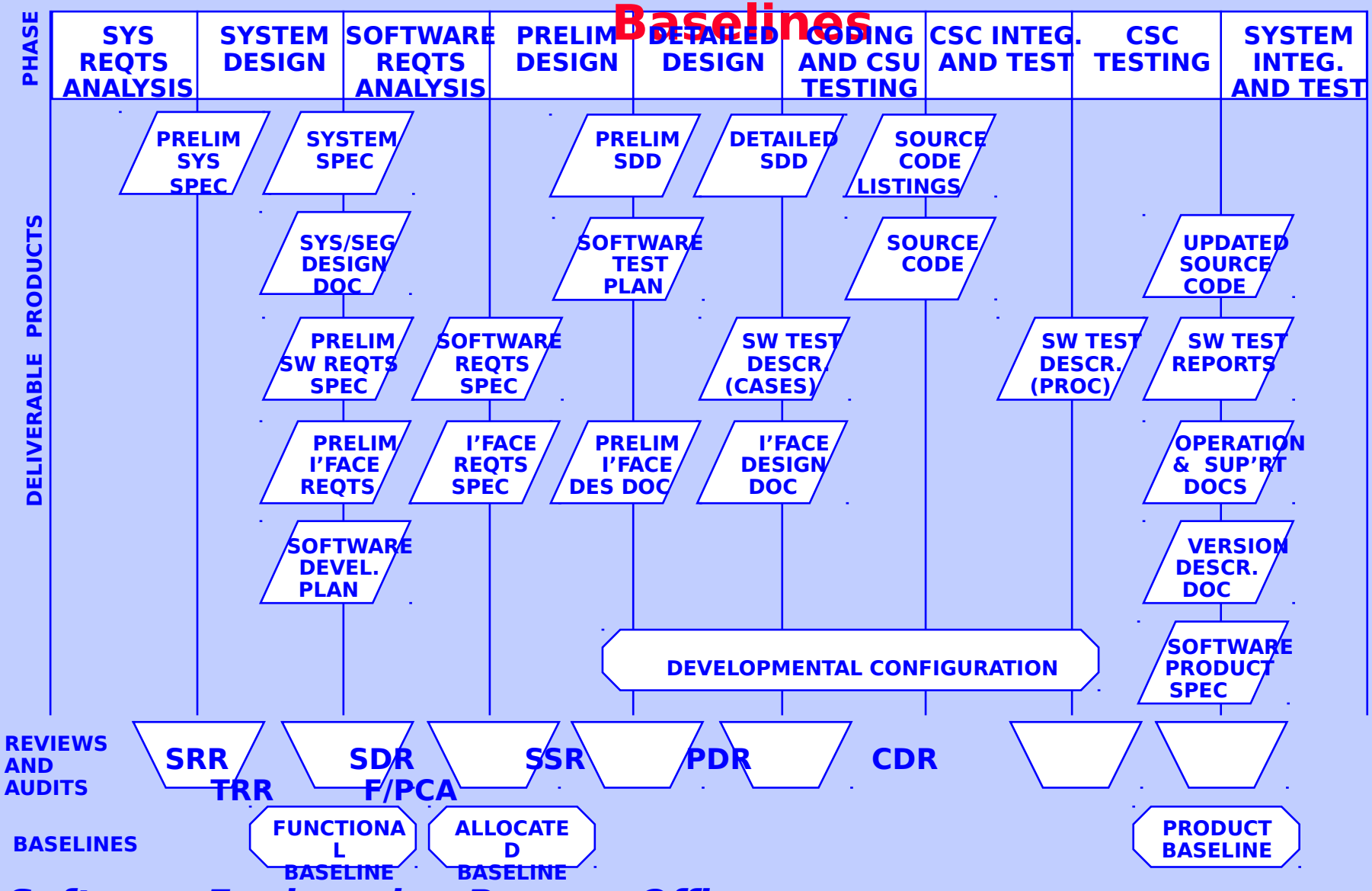
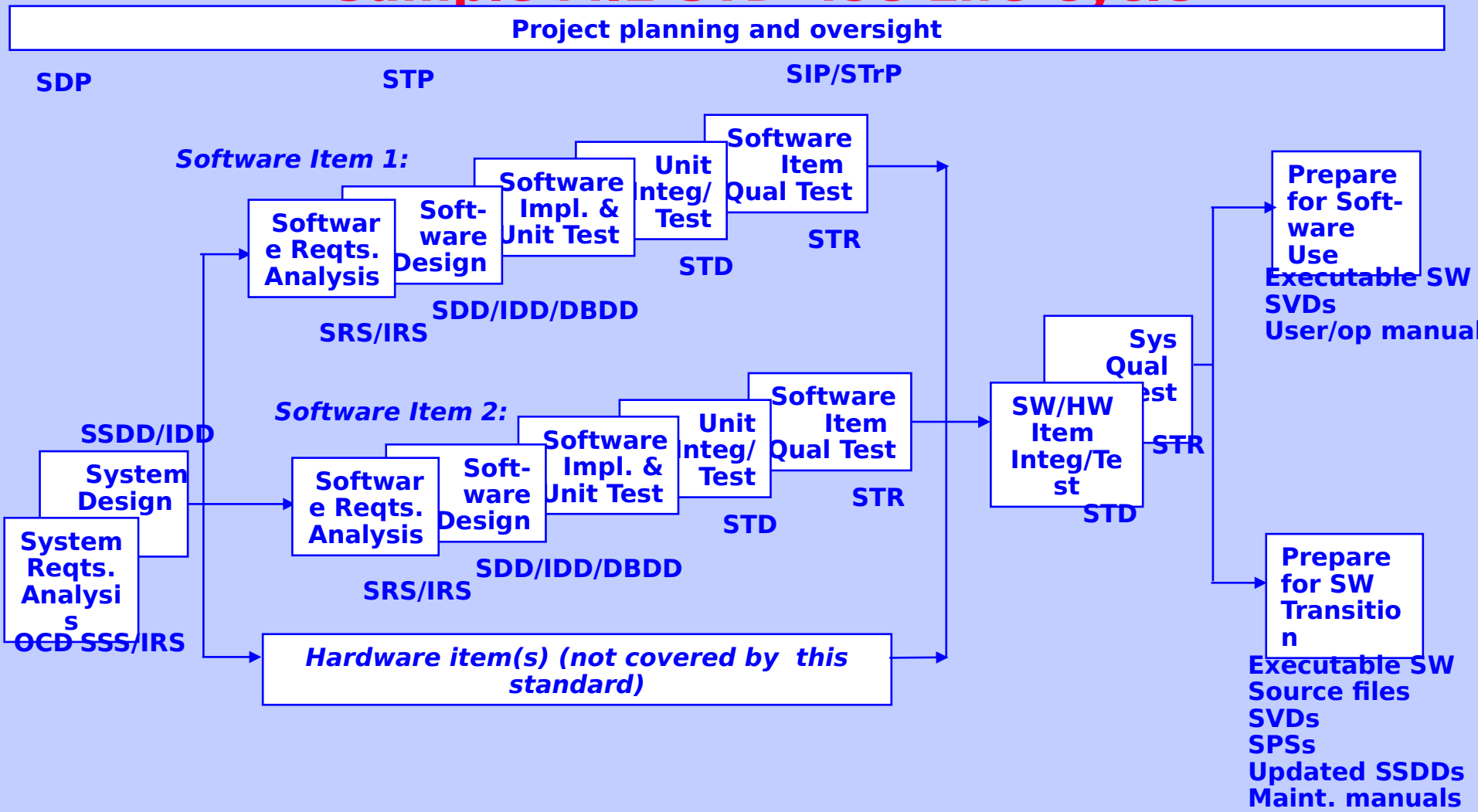
DOD-STD-2167A Deliverables, Reviews, Baselines



Sample MIL-STD-498 Life Cycle



Other ongoing activities: SQA, SCM, Reviews, Risk Management, Process Improvement, etc.

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MIL-STD-498 Data Item Descriptions and J-STD-016-1995 Software Product Descriptions

Planning
- Software Development Plan (SDP)
- Software Test Plan (STP)
- Software Installation Plan (SIP)
- Software Transition Plan STrP)

Concept and Requirements
- Operational Concept Descr. (OCD)
- System/Subsystem Spec. (SSS)
- Interface Requirements Spec. (IRS)
- Software Requirements Spec. (SRS)

Design
- System/Subsys. Design Descr. (SSDD)
- Interface Design Description (IDD)
- Database Design Description (DBDD)
- Software Design Description (SDD)

Qualification Testing
- Software Test Description (STD)
- Software Test Report (STR)

Maintenance
- Software Product Specification (SPS)
- Software Version Description (SVD)
- Computer Programming Manual (CPM)
- Firmware Support Manual (FSM)

User/Operator
- Software User Manual (SUM)
- Software Input/Output Manual (SIOM)
- Software Center Operator Manual (SCOM)
- Computer Operation Manual (COM)

MIL-STD-498 DIDs are still in effect.

How do the Standards Compare?

	DoD-STD-2167A	MIL-STD-498	IEEE/EIA 12207
Focus	Defense software products	Defense software development process	Enterprise processes
Software life cycle	9 development phases, biased to waterfall	Expands planning, use. Waterfall, incremental, evolutionary	Expands support. Once-through, incremental, evolutionary
Document requirements	52 formal DIDs	22 formal DIDs	30 Information Items - guides
Program Reviews	10 Formal Reviews – MIL-STD-1521B	11 candidate mgmt. reviews, brief guidelines	Similar to 498
Coverage for planning, QA, CM, maint.	Scant	Limited	Specified processes
Roles	Government, Contractor	Acquirer, Developer	Acquirer,Supplier, Developer, Main-tainer, Operator

How have the Development Activities Changed?

2167A Activities (9)	498 Activities (13)	12207 Activities (13)
	Proj. plan & oversight	Process Implementation
	Establish dev. environ.	
Sys reqts analysis	Sys. reqts. analysis	Sys. reqts. analysis
System design	System design	Sys. arch. design
Software reqts analysis	Software reqts analysis	Software reqts analysis
Preliminary design	Software design	Software arch. design
Detailed design		Software detailed design
Coding & CSU testing	Software impl. & unit test	Software code & test
CSC integr. & testing	Unit integration & test	Software integration
CSCI testing	CSCI qual. testing	Software qual testing
Sys integr. & testing	CSCI/HWCI int. & test	System integration
	System qual testing	System qual testing
	Prep: software use	Software installation
	Prep: software tranistion	
		Software accept support

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Have the Management Reviews changed?

DOD-STD-2167A Formal Reviews (10) mgmt. reviews (11)	MIL-STD-498 Joint Mgmt. Reviews (11)	IEEE/EIA 12207 Project
		Software plan review
	Software plan review	
		Operational concept review
Operational concept review		
System Reqts. Rev.(SRR)		System/subsys. reqts rev.
	System/subsys. reqts rev.	
System Design Rev.(SDR)		System/subsys. design rev.
	System/subsys design rev.	
Software Spec. Rev. (SSR)		Software reqts review
	Software reqts. review	
Prelim Design Rev. (PDR)		
Critical Design Rev. (CDR)		Software design review
	Software design review	
Test Readiness Rev. (TRR)		Test readiness review
	Test readiness review	
		Test results review
	Test results review	
Production Readiness Rev(PRR)	--	--
		Software usability review
	Software maintenance rev.	
		Software supportability rev.
	Software supportability rev.	

Wordsmithing the Review and Document Names

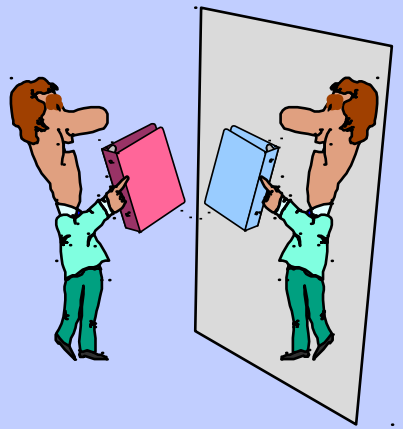
DoD-STD-2167A Formal Reviews/ Related Documents	MIL-STD-498 Joint Mgmt. Reviews/ Related Documents	IEEE/EIA 12207 Project Mgmt. Reviews/ Related Documents
System Reqts Review (SRR)	* System/subsys reqts. review	System/subsys reqts review
System/Segment Spec	* System/subsystem spec	* System requirements spec
System Design Review (SDR)	* System/subsys design review	System/subsys design review
System/Segment Spec	* System/subsystem spec	* System reqts description
Software Devel. Plan	Software Devel. Plan	* Development process plan
Software Reqts Spec	Software Reqts Spec	* Software reqts description
Interface Reqts Spec	Interface Reqts Spec	* Software reqts description
Software Spec Review (SSR)	* Software Reqts Review	Software reqts review
Software Reqts Spec	Software Reqts Spec	* Software reqts description
Interface Reqts Spec	Interface Reqts Spec	* Software reqts description
Software Test Plan	Software Test Plan	* Software integration plan
Software Users Manual	Software User Manual	* User documentation descr.
Prelim. Design Review (PDR)	* Software Design Review	Software design review
Software Design Document	* Software Design Descr.	* Software arch description
Interface Design Document	* Interface Design Descr.	* Software I'face design descr
Critical Design Review (CDR)	* Software Design Review	Software design review
Software Design Document	* Software Design Descr.	Software design description
Interface Design Document	* Interface Design Descr.	* Software I'face design descr
Software Test Description	Software Test Descr.	* Test or validation procedures
Test Readiness Review (TRR)	Test Readiness Review	Test readiness review
Software Test Description	Software Test Description	* Test or validation procedures
Software Devel. Folders	Software Devel. Folders	* Software code & test record

* =Change from previous standard

- Software Management for Executives Guidebook

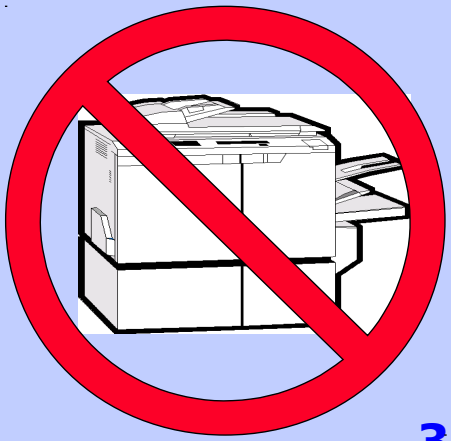
Comparing 12207 to the CMM for Software

CMM Key Process Area	IEEE/EIA 12207.1
L2: Requirements Mgmt.	Development process, activity 2 and 4
Software Project Planing	Management process
Development process, activity 1	
Proj. Track & Oversight	Management process
Software QA	Quality assurance process
Software CM	Configuration management process
Software Subctr. Mgmt.	Acquisition process
L3: Org. Process Focus	Improvement process
Org Process Def'n.	Improvement process
Integ. Software Mgmt.	Mgmt process, tailoring guidance
Training Program	Training process
Software Prod. Engr.	Development process
Intergroup Coord.	Joint review process
Peer Reviews	Joint review process



How do I Get Copies of 12207?

- Hard copies of IEEE/EIA 12207 available from IEEE
  - Print: 236 pages $182.00 IEEE Mbr: $146.00
  - PDF: $273.00 IEEE Mbr: $218.00
  - see http://standards.ieee.org
- With IEEE username & password, download from http://standards.ieee.org/catalog/olis/search.html
- Review the Defense Automated Printing Service (DAPS) ASSIST Online webpage at http://astimage.daps.dla.mil/online/
  - IEEE/EIA 12207 can be downloaded to government users with DoD Single Stock Point accounts from http://assist.daps.mil/
    Choose “Assist Quick Search” then Document Number = 12207
- Hard copies of 12207 can be ordered from DAPS, see http://www.stsc.hill.af.mil/DOC/std12207ad.doc
- Review SSC Technical Library documents and suppliers at http://iweb.spawar.navy.mil/services/sti/library/



How do I Get Copies of Other Standards?

- MIL-STD-498 and DIDs on SEPO's webpage at http://sepo.spawar.navy.mil/
- DoD and other standards can be downloaded from the Defense Automated Printing Service (DAPS) ASSIST Online webpage at http://astimage.daps.dla.mil/online/
  - Users have to register for many documents, but the Assist QuickSearch (lower right icon) can be used for the following:
  - MIL-STD-498, all DIDs, and the cancellation notice available at http://assist.daps.mil/ - choose "Assist Quick Seach" and enter document number
- Hard copies of cancelled DOD specifications and standards can be obtained from the DoD Single Stock Point (DoDSSP) at http://www.dodssp.daps.mil/
- Review SSC Technical Library documents and suppliers at http://iweb.spawar.navy.mil/services/sti/library/

The Cliff Notes: “Overview of IEEE/EIA12207”

(attached to this handout)

- 13-page summary of all three volumes and annexes
- Tabular lists of processes, activities, tasks, and related info items
* Cross references: Info Item to activity - and vice versa
* Comparison of 498 activities to 12207
* Comparison of program reviews among 2167A/1521B, 498, 12207
* Comparison of documents among 2167A, 498, J-016, 12207

(also online at http://sepo.spawar.navy.mil/sepo/Standards.html)

SEPO Recommends:

- Use IEEE/EIA 12207: It is the standard of DoD and SSC-SD
  - It models all major roles and interfaces
  - It achieves breadth of ISO/IEC 12207 and depth of MIL-STD-498
- Relate 12207, the CMMs, ISO 9000, and other standards of interest to the activities within your project
- Tailor all “standards” for your organization/project/contract
- Reconcile conflicts of[f] guidance within different “standards’ [th]e same activity

References

- *Capability Maturity Model For Software*, Version 1.1, SEI-93-TR-24, Feb. 1993.
  On web at http://rbse.jsc.nasa.gov:80/cmm/

- *IEEE Standards Collection: Software Engineering.* 1997 Edition, Institute of Electrical and Electronics Engineers, Inc. New York, NY. See http://www.ieee.org/prod_svcs.html

- *9000: Quality Management*, International Organization for Standardization, 1994. See http://www.iso.ch/welcome.html

- *The ISO 9000 Implementation Manual*, Omneo- Oliver Wight Publications, 1994. In SEPO library.

- U.S. Software Lifecycle Process Standards, Crosstalk, July 1997. See http://www.stsc.hill.af.mil/

- Defense Acquisition Policy - A More Flexible Management Approach. Program Manager magazine, July-August 1996. See http://www.dsmc.dsm.mil/pubs/pdf/pm_articles96.htm

- Software Engineering Standards - A User's Road Map. IEEE Computer Society, Nov. 1997.
  See http://www.computer.muni.cz/cspress/CATALOG/bp08008.htm